Trend Study 3-4-01

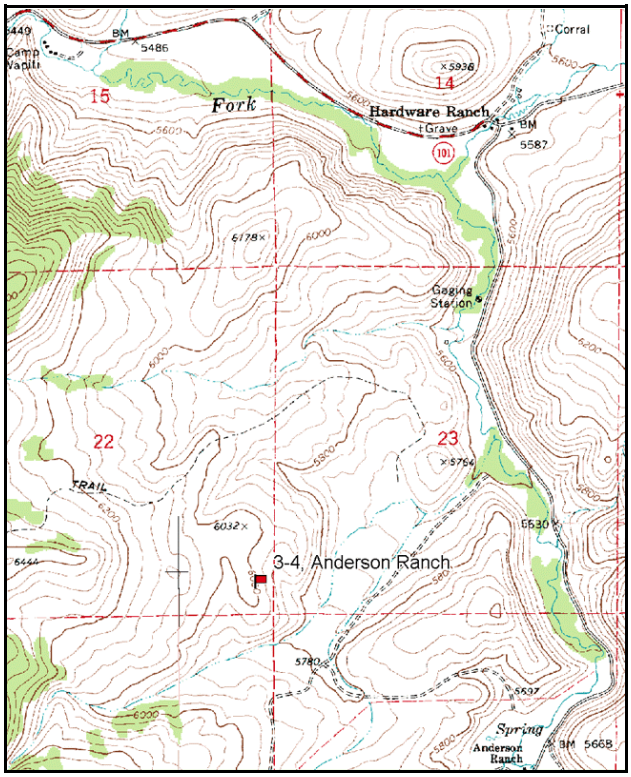
Study site name: Anderson Ranch . Vegetation type: Sagebrush-Bitterbrush .

Compass bearing: frequency baseline 168 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

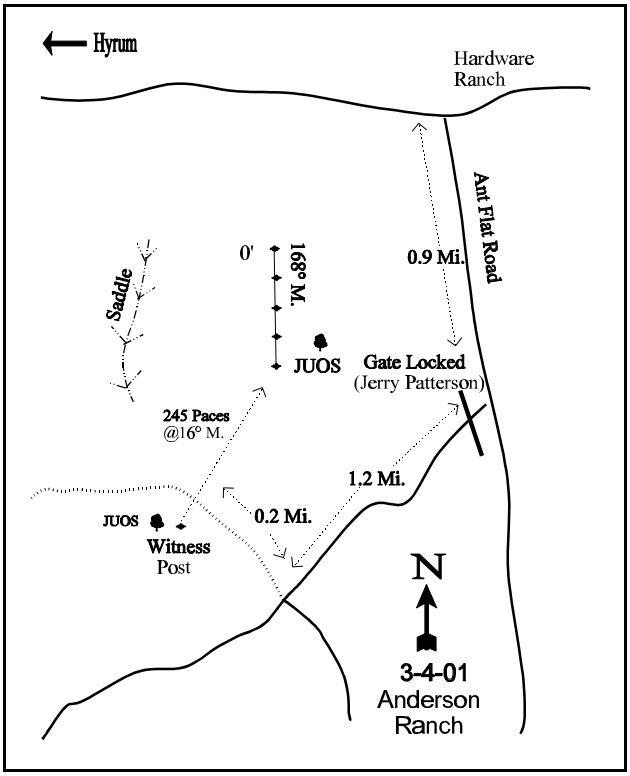
LOCATION DESCRIPTION

From Hardware Ranch, travel south on the Ant Flat Road for 0.9 miles. Turn right and go through a locked gate. Cross the Blacksmith Fork River and then proceed up the canyon 1.2 miles to a fork. Turn right (west) and travel 0.2 mile to the witness post by the road on the left side. From the witness post, walk 245 paces at 16 degrees magnetic to the 400-foot stake of the baseline. The 0-foot baseline stake is 400 feet to the north at a bearing of 348 degrees magnetic. The 0-foot stake is marked by browse tag #7932. Baseline bearing is 168 degrees magnetic.



Map Name: Hardware Ranch

Township 10N , Range 3E , Section 22



Diagrammatic Sketch

UTM 4603382 N 451731 E

DISCUSSION

Trend Study No. 3-4

The Anderson Ranch trend study is located on normal deer and elk winter range in upper Blacksmith Fork Canyon. Elevation is approximately 6,000 feet on a nearly level ridge. The prevailing plant community is mountain big sagebrush/grass with a good association of antelope bitterbrush. Mule deer use of the site was moderate in 1996 and heavy in 2001. Pellet group transect data taken in 2001 estimated 140 deer days use/acre (346 ddu/ha). Elk use was lighter at an estimated 32 elk days use/acre (79 edu/ha). Domestic sheep and cattle also utilize the area, but use in 1996 and 2001 was light.

Soil is classed as "Ant Flat Loam", a well drained series derived from sandstone and shale. This soil has a porous surface horizon about 7 inches thick. Below this depth, the subsoil is increasingly clay in texture and has concentrations of leached calcium carbonate at about 60 inches. Plant root penetration is not a problem until the calcareous zone is reached. Although the erosion hazard is moderate for this soil type (Erickson and Mortensen, 1974), the current (‘01) erosion condition classification shows soils to be stable with minimal erosion occurring. Soils at the site have a clay loam texture and a neutral soil reaction (pH of 7.0). It is extremely rocky and compacted. Effective rooting depth (see methods) was estimated at over 11 inches in 1996.

The key species are bitterbrush and mountain big sagebrush which together provide 74% of the browse cover. The estimated density of bitterbrush decreased in 1996 and 2001 compared to previous readings. The difference in density is attributed to the much larger sample used beginning in 1996, which tripled the original sample size and better estimates shrub populations which often have clumped and/or discontinuous distributions. Percent decadency in the bitterbrush population was very high in 1984 at 92%, decreasing to 67% in 1990. Currently, decadency is low at 6%. Recruitment of young plants increased from 6% in 1996 to 12% in 2001. Use on bitterbrush has been moderate to heavy in all sampling years. Vigor is good in the majority of the population with bitterbrush annual leader growth averaging just over 4 inches in 2001.

Mountain big sagebrush was also heavily utilized in 1984 with all plants sampled displaying a heavily hedged growth form. Use has since stabilized at a more moderate level. Decadent plants made up 67% of the population in 1984, decreasing to around 20% in 1990 and 2001. No decadent plants were sampled in 1996. The increase in decadent plants since 1996 is due most likely to the extended drought of the past few years. This should improve with the return of more normal precipitation patterns. During the 1996 and 2001 readings, the density of sagebrush was similar to 1984 estimates (400 plants/acre). Utilization was light to moderate and no decadent plants were found. However, dead plants, first sampled in 1996, numbered more than live ones (460 plants/acre) indicating a past die-off. Most likely this die-off was associated with the several years of continuous drought from about 1987 to 1990 (Utah climate summaries 2001). Recruitment of young plants has been moderate from 1990-2001, currently (‘01) at 14%. However, the number of dead plants was higher than the number of young in both 1996 and 2001. Annual leader growth averaged just over 2 inches in 2001.

The most numerous shrub on the site is stickyleaf low rabbitbrush. It provided 26% of the browse cover in 2001 and had an estimated density of 2,380 plants/acre. This species appears to be stable as 85% of the population consisted of mature plants. Plants are not utilized and vigor is normal. Decadency increased from 2% in 1996 to 13% in 2001.

Understory composition and density are dominated by perennial grasses, most notably bluebunch wheatgrass and Sandberg bluegrass. Annual grasses, first included in 1996, were also abundant with Japanese brome and cheatgrass producing 29% of the grass cover in 1996. Due to drought conditions of the past 2 years, these 2

species have decreased to only 7% of the grass cover. Bulbous bluegrass, a low value perennial, has increased significantly in nested frequency between 1996 and 2001. Considering elevation and annual precipitation, the forb composition is not very abundant and its composition is poor. A long history of sheep grazing has possibly given grasses a competitive advantage. The most common forb in 1996 was western yarrow, which is reputedly unpalatable to livestock but is used by deer and elk. Storksbill provides the most cover of any forb species in 2001. Most forbs are occasional in their occurrence and provide relatively little forage.

1984 APPARENT TREND ASSESSMENT

Soil trend appears stable because of a moderately dense cover of perennial grasses that is effective in preventing runoff and erosion. Vegetative trend may be declining because of unfavorable age structures in populations of the key browse species and an apparent increase in density and cover of grass and stickyleaf low rabbitbrush.

1990 TREND ASSESSMENT

Contrary to the downward trends predicted in 1984, the browse component on this site has not experienced a significant decline. In fact, mountain big sagebrush and bitterbrush have increased while percent decadency has decreased. The sagebrush and bitterbrush have a more balanced age class structures now. Low rabbitbrush remains a prominent factor in the understory as it has increased also. There is still a high percentage of decadence in the bitterbrush population. The sagebrush and bitterbrush have a heavily hedged growth form, as some forage production is unavailable. The healthy understory of grasses and forbs has stayed about the same. The understory provides adequate vegetative and litter ground cover.

TREND ASSESSMENT
soil - stable (3)
browse - up (5)
herbaceous understory - slightly improving (4)

1996 TREND ASSESSMENT

The soil trend is up with a considerable decline in bare ground cover (22% down to 11%). Litter cover remained similar to 1990 estimates, while cryptogamic cover nearly doubled. Vegetation and litter cover are abundant and well dispersed and effectively limit erosion. The browse trend appears stable. Bitterbrush density declined from 999 plants/acre in 1990 to 320 by 1996. However, the lack of a high number of dead plants (only 100 plants/acre) would indicate that most of the change in density is due to the much larger sample size giving a more accurate population estimate. Utilization is moderate to heavy, vigor normal, with no decadent plants encountered. The mountain big sagebrush population has declined 60% since 1990. The large number of dead plants (460 plants/acre) would suggest that this change is less related to sample size, and more closely associated with many years of extended drought (1987 to 1990). Stickyleaf low rabbitbrush is currently the most abundant shrub. It appears to have a stable population. The herbaceous understory is dominated by grasses. Sum of nested frequency for perennial grasses has declined since 1990. Bluebunch wheatgrass has maintained a stable nested frequency. However, Prairie junegrass and Sandberg bluegrass have declined. Annual grasses are also common but were not included in the previous samples so no comparisons can be made. The forb component is still poor, as it makes up only 7% of the herbaceous cover. Sum of nested frequency for perennial forbs has declined 53% in nested frequency since 1990. Overall, trend is considered slightly down.

TREND ASSESSMENT
soil - up (5)
browse - stable (3)
herbaceous understory - slightly down (2)

2001 TREND ASSESSMENT

Trend for soil is stable. Protective cover from vegetation and litter remain at 1996 levels. Trend for the key browse species is stable. Densities for bitterbrush and mountain big sagebrush remain stable. Percent decadency increased for both species in 2001 due to the drought conditions of the past 2 years. Although these increases are small and vigor remains good. The herbaceous understory has a slightly upward trend. Sum of nested frequency for perennial grasses slightly increased, with the most abundant species, bluebunch wheatgrass, remaining stable. Sandberg bluegrass and bulbous bluegrass both significantly increased in nested frequency. Another positive aspect is the significant decrease in annual brome grasses on the site due to drought.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --
Herd unit 03 , Study no: 4

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron spicatum	271	276	267	237	90	91	88	77	12.89	12.87
G	Bromus japonicus (a)	-	-	$_{b}$186	$_{a}$81	-	-	61	37	5.14	.85
G	Bromus tectorum (a)	-	-	$_{b}$114	$_{a}$46	-	-	40	17	2.62	.73
G	Elymus cinereus	-	-	2	3	-	-	1	1	.53	.85
G	Hordeum jubatum	4	5	-	-	2	3	-	-	-	-
G	Koeleria cristata	52	53	28	32	21	20	13	16	.79	.55
G	Poa bulbosa	$_{a}$-	$_{a}$-	$_{b}$52	$_{c}$85	-	-	23	30	1.55	2.82
G	Poa pratensis	-	-	-	4	-	-	-	3	-	.04
G	Poa secunda	$_{ab}$202	$_{c}$267	$_{a}$160	$_{bc}$213	81	90	63	70	3.42	4.59
G	Stipa comata	-	-	-	1	-	-	-	1	-	.00
Total for Annual Grasses		0	0	300	127	0	0	101	54	7.76	1.59
Total for Perennial Grasses		529	601	509	575	194	204	188	198	19.20	21.74
Total for Grasses		529	601	809	702	194	204	289	252	26.96	23.33
F	Achillea millefolium	$_{b}$191	$_{a}$84	$_{a}$49	$_{a}$55	73	40	21	24	.60	.42
F	Agoseris glauca	$_{a}$-	$_{b}$126	$_{a}$1	$_{a}$2	-	59	1	1	.00	.00
F	Allium acuminatum	$_{b}$23	$_{a}$4	$_{a}$-	$_{a}$1	10	2	-	1	-	.00
F	Alyssum alyssoides (a)	-	-	$_{b}$114	$_{a}$67	-	-	45	31	.32	.18

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Antennaria rosea	-	-	-	2	-	-	-	1	-	.03
F	Arabis drummondi	$_{a}$-	$_{ab}$1	$_{b}$9	$_{a}$-	-	1	5	-	.02	-
F	Aster chilensis	-	1	3	3	-	1	1	1	.00	.03
F	Astragalus convallarius	$_{a}$-	$_{b}$17	$_{b}$10	$_{ab}$2	-	11	5	1	.05	.03
F	Calochortus nuttallii	3	-	-	1	2	-	-	1	-	.00
F	Cirsium undulatum	12	12	14	7	6	6	6	5	.39	.24
F	Collomia linearis (a)	-	-	9	4	-	-	5	3	.02	.01
F	Collinsia parviflora (a)	-	-	60	58	-	-	24	27	.11	.16
F	Crepis acuminata	$_{a}$-	$_{b}$10	$_{a}$-	$_{a}$-	-	6	-	-	-	-
F	Cryptantha spp.	-	6	-	-	-	3	-	-	-	-
F	Descurainia pinnata (a)	-	-	3	-	-	-	1	-	.00	-
F	Draba spp. (a)	-	-	-	3	-	-	-	1	-	.00
F	Epilobium brachycarpum (a)	-	-	13	19	-	-	6	8	.03	.16
F	Eriogonum cernuum (a)	-	-	1	-	-	-	1	-	.00	-
F	Erodium cicutarium (a)	-	-	$_{a}$7	$_{b}$50	-	-	4	20	.07	1.65
F	Erigeron spp.	-	-	-	3	-	-	-	2	-	.06
F	Eriogonum umbellatum	-	3	1	2	-	2	1	1	.03	.00
F	Holosteum umbellatum (a)	-	-	$_{b}$76	$_{a}$29	-	-	31	14	.28	.44
F	Lappula occidentalis (a)	-	-	2	11	-	-	1	5	.00	.03
F	Lactuca serriola	-	-	-	3	-	-	-	2	-	.01
F	Lithospermum ruderale	$_{a}$-	$_{a}$-	$_{b}$10	$_{a}$-	-	-	5	-	.24	-
F	Lupinus argenteus	9	7	8	3	4	2	6	2	.06	.04
F	Microsteris gracilis (a)	-	-	$_{b}$44	$_{a}$4	-	-	17	2	.08	.01
F	Orthocarpus tolmiei (a)	-	-	$_{b}$19	$_{a}$-	-	-	10	-	.30	.03
F	Phlox longifolia	-	5	-	-	-	2	-	-	-	-
F	Polygonum douglasii (a)	-	-	$_{b}$32	$_{a}$5	-	-	14	3	.07	.01
F	Ranunculus testiculatus (a)	-	-	9	-	-	-	3	-	.01	-
F	Taraxacum officinale	-	9	-	-	-	3	-	-	-	-
F	Tragopogon dubius	$_{ab}$21	$_{a}$3	$_{a}$9	$_{b}$33	10	1	5	18	.05	.34
F	Trifolium gymnocarpon	-	-	4	-	-	-	2	-	.01	-
F	Unknown forb-perennial	-	2	-	-	-	1	-	-	-	-
F	Veronica biloba (a)	-	-	1	-	-	-	1	-	.00	-
F	Zigadenus paniculatus	-	3	-	-	-	1	-	-	-	-
Total for Annual Forbs		0	0	390	250	0	0	163	114	1.34	2.71
Total for Perennial Forbs		259	293	118	117	105	141	58	60	1.47	1.24
Total for Forbs		259	293	508	367	105	141	221	174	2.81	3.95

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 03 , Study no: 4

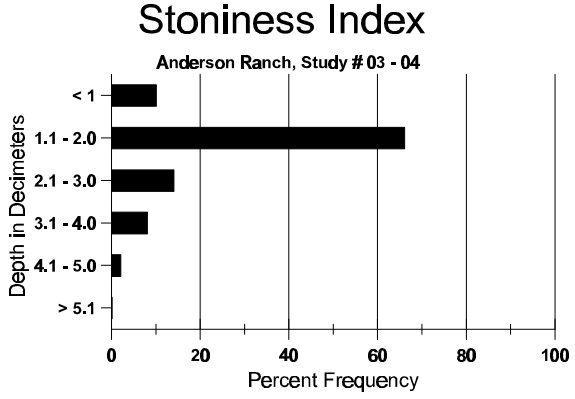
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Artemisia tridentata vaseyana	19	15	3.47	5.05
B	Chrysothamnus viscidiflorus viscidiflorus	66	57	4.69	3.65
B	Eriogonum heracleoides	0	1	-	-
B	Gutierrezia sarothrae	9	1	.24	-
B	Purshia tridentata	15	16	4.09	5.25
B	Tetradymia canescens	2	4	-	-
Total for Browse		111	94	12.50	13.97

BASIC COVER --
Herd unit 03 , Study no: 4

Cover Type	Nested Frequency '96	Nested Frequency '01	Average Cover % '84	Average Cover % '90	Average Cover % '96	Average Cover % '01
Vegetation	383	364	6.25	19.75	43.24	47.43
Rock	102	30	1.00	.75	.86	.36
Pavement	140	130	1.25	0	.95	.93
Litter	399	385	70.75	50.75	51.29	52.27
Cryptogams	219	150	5.50	7.00	12.98	6.75
Bare Ground	179	183	15.25	21.75	10.92	14.55

SOIL ANALYSIS DATA --
Herd Unit 03, Study no: 04, Anderson Ranch

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.5	57.4 (15.1)	7.0	42.7	24.0	33.3	3.7	14.3	115.2	.6



PELLET GROUP FREQUENCY --
Herd unit 03 , Study no: 4

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'96	'01	'01	'01
Sheep	4	3	261	N/A
Rabbit	5	8	52	N/A
Grouse	-	1	-	-
Elk	23	10	418	32 (79)
Deer	38	53	1818	140 (346)
Cattle	2	-	-	-

BROWSE CHARACTERISTICS --
Herd unit 03 , Study no: 4

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Artemisia tridentata vaseyana																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	2	-	-	-	-	-	2	-	-	4	-	-	-	266			4
	96	4	1	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	-	-	2	-	-	-	-	-	-	2	-	-	-	133	28	35	2
	90	4	2	-	2	-	-	-	-	-	8	-	-	-	533	28	31	8
	96	3	12	-	-	-	-	-	-	-	15	-	-	-	300	35	50	15
	01	11	3	-	-	-	-	-	-	-	14	-	-	-	280	33	50	14
D	84	-	-	4	-	-	-	-	-	-	4	-	-	-	266			4
	90	2	1	-	-	-	-	-	-	-	3	-	-	-	200			3
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	2	-	-	-	-	-	-	-	4	-	-	-	80			4
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	460			23
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	180			9

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	100%	00%	+60%
'90	20%	00%	00%	-60%
'96	65%	00%	00%	+ 5%
'01	29%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	399	Dec:	67%
	'90	999		20%
	'96	400		0%
	'01	420		19%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	7	-	-	-	-	-	-	-	-	7	-	-	-	466			7
	90	9	-	-	1	-	-	-	-	-	10	-	-	-	666			10
	96	3	1	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	2	1	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	30	-	-	-	-	-	-	-	-	30	-	-	-	2000	12	13	30
	90	27	1	-	9	1	-	1	-	-	39	-	-	-	2600	13	17	39
	96	136	11	-	2	-	-	-	-	-	149	-	-	-	2980	15	23	149
	01	91	1	-	9	-	-	-	-	-	101	-	-	-	2020	12	20	101
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	1	-	-	-	-	-	-	-	1	-	-	1	133			2
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	01	14	-	-	1	-	-	-	-	-	14	-	-	1	300			15
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+27%
'90	06%	00%	02%	- 8%
'96	08%	00%	00%	-24%
'01	02%	00%	.84%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	2466	Dec:		0%
'90	3399			4%
'96	3120			2%
'01	2380			13%

Eriogonum heracleoides																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	10	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	0	Dec:	-
'90	0		-
'96	0		-
'01	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	21	-	-	-	-	-	-	-	-	21	-	-	-	420	7	9	21
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	5	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	-95%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	0	Dec:		-
'90	0			-
'96	440			-
'01	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus scopulorum																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	1	-	1	-	-	-	66	134	81	1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	0	Dec:		-
'90	66			-
'96	0			-
'01	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	1	-	-	1	-	-	3	-	-	-	200			3
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	1	-	-	-	1	-	-	-	-	2	-	-	-	40			2
M	84	-	-	1	-	-	-	-	-	-	1	-	-	-	66	32	37	1
	90	1	1	-	-	-	-	-	-	-	2	-	-	-	133	15	26	2
	96	4	7	4	-	-	-	-	-	-	15	-	-	-	300	29	55	15
	01	5	-	6	-	1	2	-	-	-	14	-	-	-	280	36	62	14
D	84	-	-	8	-	1	3	-	-	-	11	-	1	-	800			12
	90	-	-	-	1	4	-	-	-	5	8	-	-	2	666			10
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	1	-	-	-	-	-	-	1	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	08%	92%	08%	+13%
'90	33%	33%	13%	-68%
'96	44%	25%	00%	+ 6%
'01	12%	53%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	866	Dec:	92%
	'90	999		67%
	'96	320		0%
	'01	340		6%

Symphoricarpos oreophilus																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	15	16	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	19	28	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	0		-
	'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Tetradymia canescens																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	1	-	-	-	-	-	2	-	-	-	40	18	33	2
	01	4	-	-	-	-	-	-	-	-	4	-	-	-	80	17	33	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	
'96	00%	00%	00%	+50%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	0	Dec:	-
	'90	0		-
	'96	40		-
	'01	80		-